

# Interconnection Standards - Best State Practices

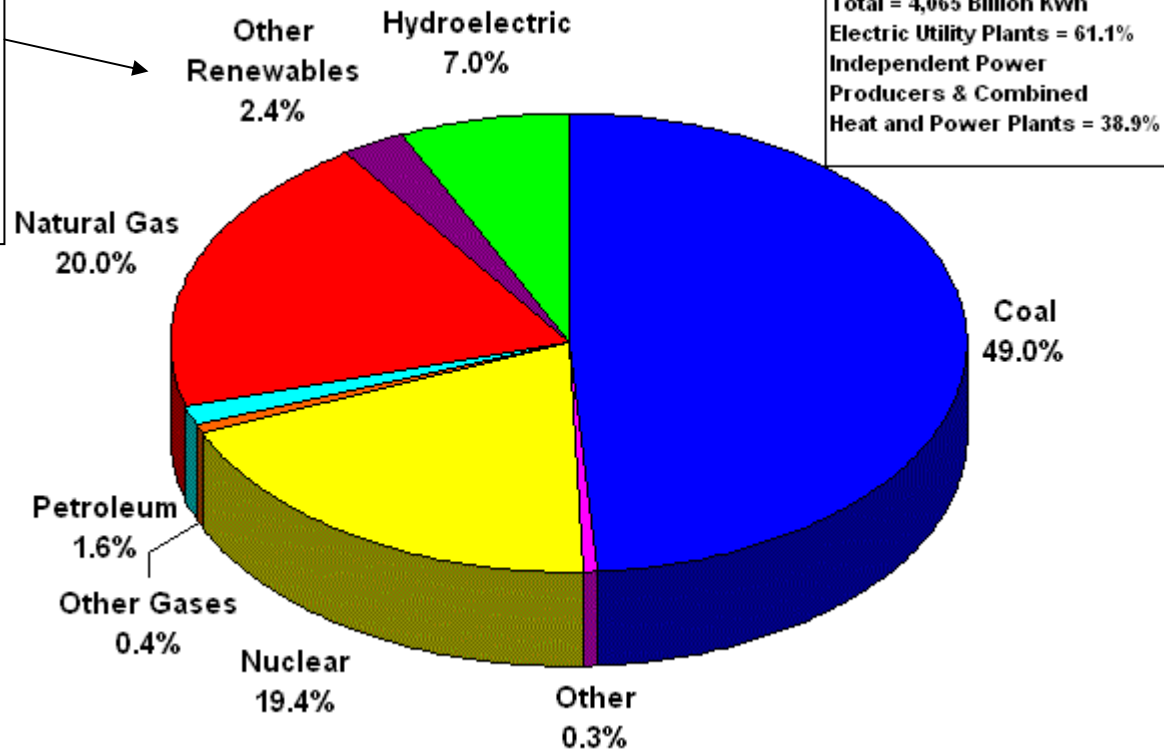
Interstate Renewable Energy Council  
presentation to the  
Montana Public Service Commission  
November 28, 2007

# IREC's Perspective

- DOE funded to provide expertise regarding net metering and interconnection
- Not a renewable industry advocate, but well regarded by the industry
- 25 year history, more state participation in net metering and IC dockets than any other organization
- Active in 2007 in NM, IL, NC, MD, TX and FL
- Personal background
  - Eight years at a solar R&D company
  - Attorney for numerous solar companies
  - Board member, American Solar Energy Society

# Distributed Generation in the U.S. – a sliver of total generation

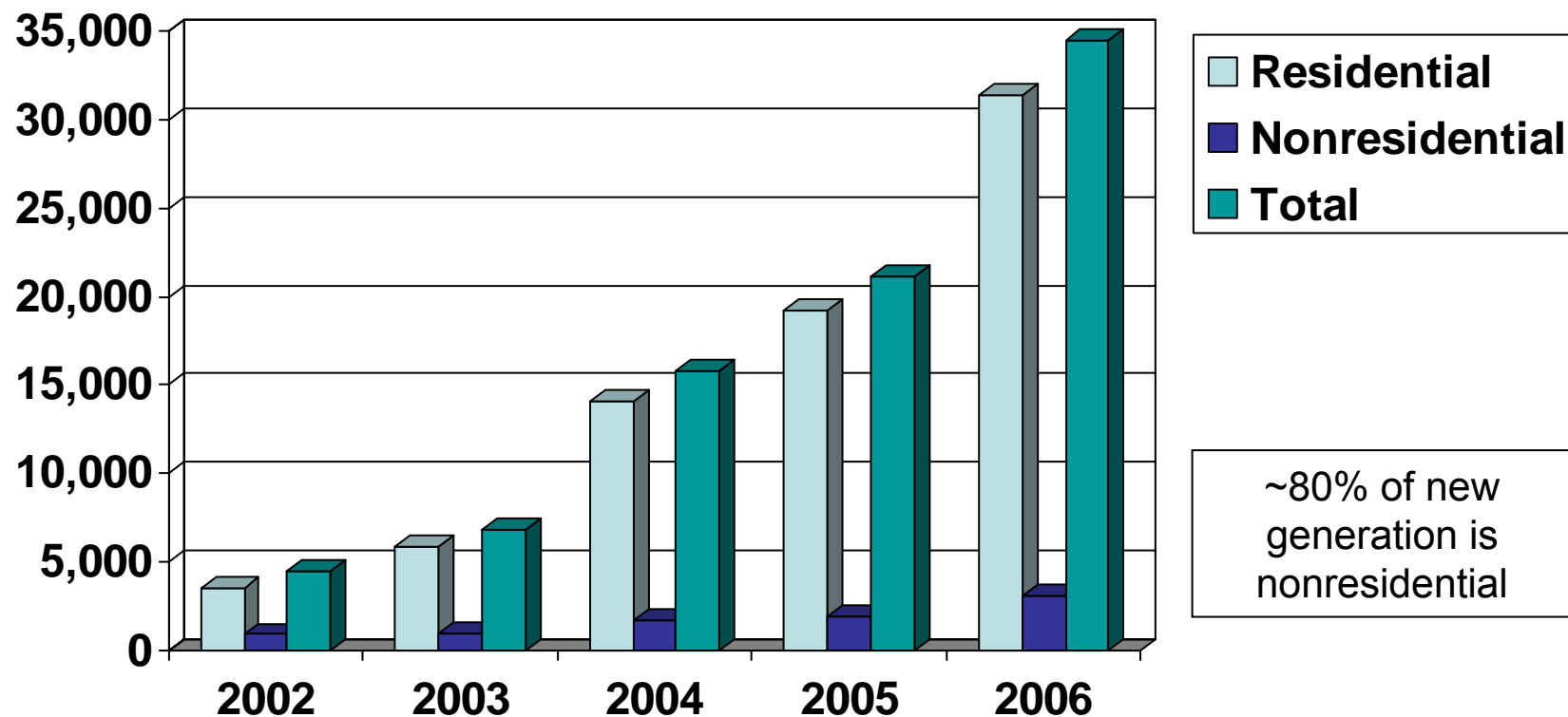
Solar is 0.5% of “other renewables” with ~569,000 MWh/yr as of 8/06; ~.014% of total generation (EIA data, probably understated)



*Germany has the world's most aggressive solar program, with and 0.66% of generation provided by distributed solar*

Source: U.S. DOE Energy Information Administration  
<http://www.eia.doe.gov/cneaf/electricity/epa/figes1.html>

# Net Metered Systems in the U.S.



Source: U.S. DOE Energy Information Administration  
<http://www.eia.doe.gov/cneaf/electricity/epa/epat7p5.html>

# Why adopt Interconnection Standards?

- Customer demand
- Environmental
- Familiarity prior to potential wave

## Why not?

- Easier to do nothing / limited impact
- Cost allocation concerns
- Safety and reliability concerns

# Safety Concerns

- No reported line worker injuries related to solar energy systems anywhere
- Very few reports of inverters failing to take systems off line when the grid goes down
- Microturbines complying with IEEE 1547 are very unlikely to feed power onto the grid
- Danger from plug-in generators (ie, Honda generators) without IEEE 1547 compliance is significant
- Questions? IREC consultant – Mike Sheehan

# What's in most IC standards

- UL 1741 – certified inverters
- IEEE 1547 & 1547.1 – IC standards & tests
- Screens for expedited review
- Study process if screens not met
- Standardized fees and timelines
- Application forms – simplified for small systems
- Agreements – simplified for small systems
- Some level of utility discretion

# Interconnection Best Practices



- Individual system capacity limit  $\geq 10$  MW
- All utilities participate; all customers eligible
- Multiple levels of review (simplified)
- Non-exporting generator provisions
- Transparent screens, study reviews, timelines
- Minimal application fees; no additional fees, charges
- Standard form agreements, applications
- No additional insurance requirements
- IEEE 1547 and UL 1741
- Network interconnection permitted
- No external disconnect switch



# Why adopt the FERC SGIP/SGIA?

(Small Generator Interconnection Procedure & Agreement)

- Order 2006/SGIP/SGIA thoroughly vetted
- Minimal effort to adopt
- Familiar standards will attract industry

## Why not?

- Address Montana utility concerns
- Incorporate lessons learned since 2005
- More installations with better standards

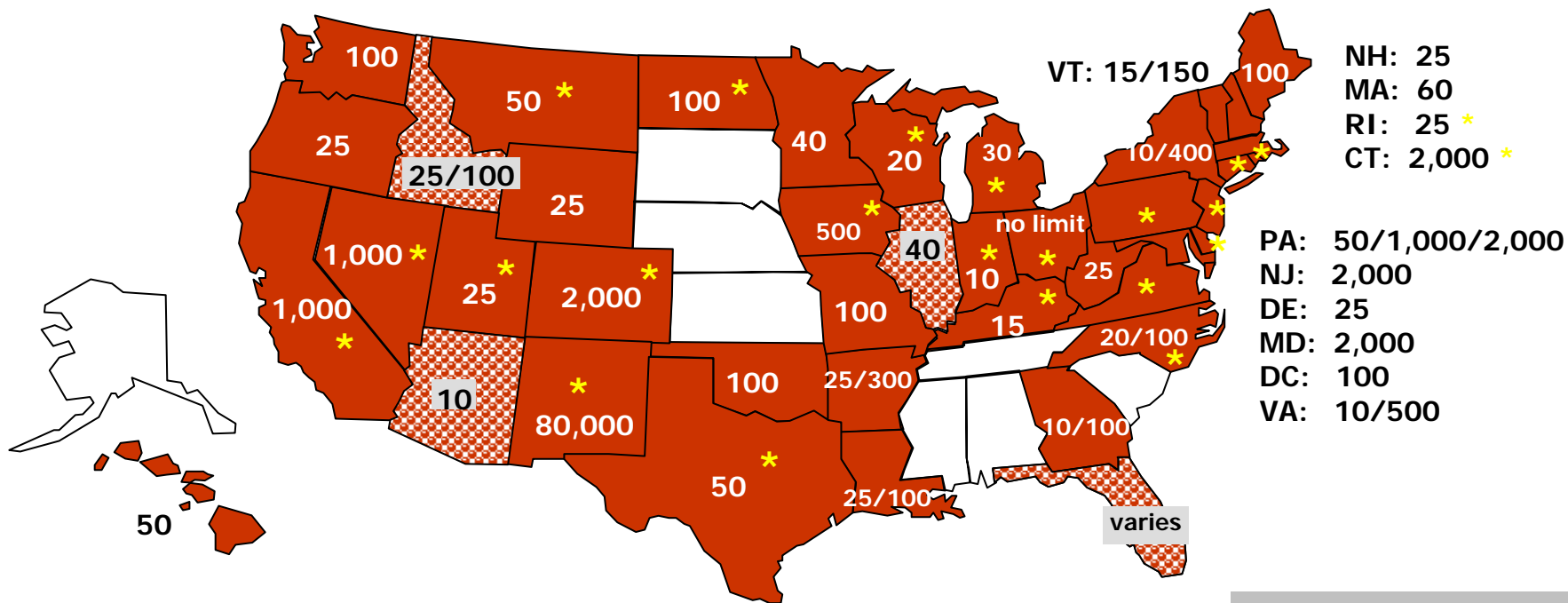
# How to Proceed

- Either adopt FERC standards or commit to a better result; significantly less isn't worth bothering to adopt
- Pick a starting point – IREC, FERC, CA, NJ or CO are good (NARUC model is dated)  
*(IREC model at [www.irecusa.org](http://www.irecusa.org))*
- Review “Freeing the Grid” grading  
*([www.newenergychoices.org](http://www.newenergychoices.org))*
- Establish a three month workshop with three meetings & three teleconferences

# Net metering availability

[www.dsireusa.org](http://www.dsireusa.org)

June 2007



**Net metering is available in 42 states + D.C.**

(Numbers indicate system size limit in kW; in some cases limits are different for residential and commercial systems, as shown)

# Net Metering Statute Revisions since fall, 2005

- Individual capacity raised: AR, CT, MD, NH, NM, NV, WA
- Aggregate capacity raised: CA, MD, NH, VA, VT, WA
- More resources eligible: OR, NC, NH, VT, VA, WA
- Non-exporting generator treatment clarified/improved:  
AR, CT, MD, NC, NH, NV, OH
- REC ownership clarified/improved: AR, MD, NV
- Leased systems eligible: MD, VA

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